

cess has not yet been reached. While the application of the theory to the solar system is kept mainly in view, the evidence of its truth afforded by observations further afield is by no means neglected; but no attempt is made to trace the story of celestial evolution generally, or to state the various stellar stages through which the sun itself must have passed. Thus, for the most part, only familiar ground is traversed, and the chief value of the book as a contribution to the literature of the subject lies in the clearness of exposition and wealth of illustration.

The maintenance of the sun's heat and the principle of the conservation of moment of momentum are treated in a specially lucid manner, and the appendices dealing more fully with these questions greatly enhance the value of the book to students.

Objection might be made to the use of the term "fire mist" as applied to the original nebula, since it was not necessarily an incandescent mass, and consequently also to the extension of the theory which attributes this nebula to the collision of two dark bodies. As a minor objection, the view that the sun's photosphere is composed of particles of carbon cannot yet be regarded as the demonstrated fact which the author seems to suppose. A curious error, occurring on p. 277, may also be mentioned; it is stated that the discovery of helium in the sun in 1868 was made during an eclipse, whereas the main point of the observation to which reference is made was that it was made without an eclipse.

There are numerous excellent illustrations, many of them from photographs; but the descriptions are in some cases quite inadequate. Thus, Figs. 43, 44 and 54 will only be intelligible to those who have a fair acquaintance with astronomical spectroscopy, and the numerous photographs of nebulae appear to have been distributed almost at random.

Monograph of the Coccidæ of the British Isles. By Robert Newstead. Vol. i. Pp. xii + 220. Plates A-E, 1-34. (London: Ray Society.)

THE Coccidæ, or scale-insects, are of great importance horticulturally and economically, for although some species yield important products, such as lac and cochineal, others are among the most destructive pests of our orchards and gardens, being peculiarly injurious to plants grown under glass. Mr. Newstead, himself a practical gardener, has devoted many years to their study, and has given us the results of his painstaking investigations in the present work. He admits about ninety species and varieties of Coccidæ as occurring in the British Islands, belonging to eight of the twelve subfamilies at present recognised, the other four being at present unrepresented in Britain. The systematic part of the first volume deals only with the first subfamily, the Diaspinæ, to which Mr. Newstead refers eleven genera and thirty-seven species. A very full introduction is prefixed to the volume, dealing with the structure and habits, parasites, enemies, &c., of the Coccidæ, and practical observations on the best means of coping with their ravages, and full directions for collecting and preserving. Among the most original of the author's observations are those relating to birds as destroyers of Coccidæ.

Till recently the Coccidæ have been one of the families of insects most neglected by British entomologists, and Mr. Newstead's admirable monograph adds another to the important series of works on neglected groups of insects for which we are indebted to the Ray Society. There is still, however, much work to be done before our knowledge of the insects of the British Islands can be considered to be anything like complete, especially, perhaps, among the parasitic Hymenoptera, which have been strangely neglected by most entomologists, notwithstanding their vast number and variety, their beauty, and their economic importance in keeping down the numbers of all kinds of insect pests. This neglect may perhaps

be accounted for, however, by the small size of the great majority of the species, many of which, including some of the most curious and beautiful, are among the smallest insects known. But we hope to see these and other neglected groups of insects gradually worked out, on similar lines to those followed by Mr. Newstead in the present work.

Le Sel, les Salines et les Marais Salants. Par A. Larbalétrier, Professeur à l'Ecole d'Agriculture de Grand-Jouan. Pp. 166. (Paris: Masson et Cie; Gauthier Villars. No date.)

THIS volume is one of the "Encyclopédie Scientifique des Aide-Mémoire," a title which sufficiently expresses its scope. After a brief description of chlorine, sodium and the properties of sodium chloride, the methods of production of salt from sea-water on the coast of France are described, followed by short accounts of the treatment of the mother liquors of crystallisation for bromine, of the principal European salt mines, of the production of salt from saline springs, and of the Stassfurt deposits. The book concludes with a description of the impurities and analysis of salt, statistics of production in various countries, and of the use of salt in food, agriculture and medicine, and, lastly, a bibliography—perhaps the most important part in a work which is chiefly a compilation of facts obtained from other sources.

An encyclopedic article of this description, published in a handy form, will be useful provided the data given can be relied upon. Unfortunately, in this instance this is not always the case; a number of misprints occur in the figures in the tables, misstatements are made in the chemical details, and names of places are misspelt. On the other hand, the methods of mining salt in the principal European mines and the production of salt from sea-water and saline springs in France are adequately described, and the book is written in a readable form, sufficiently illustrated and well printed.

T. S. D.

Elementary Ophthalmic Optics, including Ophthalmoscopy and Retinoscopy. By J. H. Parsons. Pp. 162. (London: J. and A. Churchill, 1901.) Price 6s. 6d.

A SOUND statement of the optical principles involved in ophthalmology, which nevertheless does not require a knowledge of higher mathematics, and which is confined within reasonable limits, has no doubt been long sought by students of this special branch of surgery, and in "Elementary Ophthalmic Optics," now under notice, they will find a trustworthy exposition of the laws affecting the refraction of the eye. The book is well printed and the diagrams are large and clear; it seems a pity, perhaps, that the author was not bold enough to depart from the conventional letters used in optical formulæ, which, such as f, f_1, f_1', f_2, f_2' , become liable to confusion, though it is difficult to suggest better symbols offhand.

The student should have been warned that the equation $1/l_2 = F^2$ (p. 14), if applied in the case of parallel rays proceeding from infinity, becomes indeterminate. The equations proved in chapters iv. and v. become exceedingly wearisome, important though they are, but a few illustrations of their application at the time would relieve the monotony, which might frighten the more practical man from continuing his reading to the later portions of the book, where their results are made use of and where stress is laid on several most important points not usually explained or mentioned in works on ophthalmology. It is not altogether clear where all the distances given for Listing's schematic eye are measured from; also in an earlier and a later page the foci of the aphakic eye are given differently, leading to confusion in the mind of a careful reader. Chapter vii. brings into prominence some very essential facts in relation to the size of the image formed in the ametropic eye and the effect of spectacles

and their position thereon. The proofs here given should serve to elucidate some of the puzzling cases not infrequently met with in testing errors of refraction. Chapter x., again, gives much valuable information on the use of the ophthalmoscope to the best advantage, and the difficulties of retinoscopy are sufficiently dealt with in the last chapter. There is no mention of accommodation or presbyopia, several points in which might well have been touched upon. An index would have been of assistance in the search for any equation relating to a particular case.

The Process Year Book, 1901-2. Edited by William Gamble. Pp. xvi+152. (London: A. W. Penrose and Co., 1901.)

EVERY year we receive this admirable and beautiful book illustrating the present state of process work, and we cannot do better than again suggest that everyone interested in the art of picture reproduction should be the possessor of this volume. The illustrations and text still maintain their high standard of excellence, and the variety of the subjects and processes dealt with gives the reader a good insight into the manifold methods in photo-mechanical engraving and the allied arts and crafts.

It may, perhaps, be specially mentioned that in consequence of the great advance in the department of process work relating to the three-colour method the editor has introduced a variety of specimens such as perhaps never before has been collected together between the covers of a single book. A glance at these soon suffices to illustrate the high state of efficiency of the methods employed to-day; and one only wonders what the future has in store for us, since it is to this branch of process work that we look for the possibility of the greatest progress.

Nautical Astronomy. By J. H. Colvin, B.A. Pp. 127. (London: E. and F. N. Spon, Ltd., 1901.) Price 2s. 6d. net.

ONE of the greatest difficulties encountered in the study of spherical and nautical astronomy is to obtain a proper comprehension of the various circles of the celestial sphere, without which the solution of the problems involved can never be anything more than mechanical. The author of this book, however, has not thought it necessary to assist the student greatly in this direction, for fifty very brief definitions can by no means be regarded as an adequate introduction to celestial geometry. Thus, unless the student is endowed with an exceptionally good geometrical imagination, or has the advantage of a good teacher, it does not seem likely that he will be able to use the book with profit. The initial difficulties excepted, however, the book has many good features; the explanatory matter is brief and clear, and there is a useful collection of formulæ, rules, numerical illustrations and exercises to be worked out. Much space is saved by the omission of tables which do not vary, while specimen pages of the "Nautical Almanac," adapted to the exercises, have been introduced.

The book is designed to cover the elementary and advanced stages of the South Kensington syllabus, and also includes the course for "extra master" in the Board of Trade examination.

Elementary Chemical Theory. By G. H. Martin, M.A., F.C.S. Pp. 24. (London: Rivingtons, 1902.) Price 9d.

THE only use to which this collection of didactic statements can be put is to furnish students of chemistry with material suitable for copying into their notebooks. It was scarcely worth while to attempt to extend the use of the book beyond the author's own pupils.

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LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Cherry Disease.

IN NATURE for January 9 (p. 239) there is a report of the meeting of the Royal Microscopical Society on December 18. The president, Mr. William Carruthers, F.R.S., made a communication with respect to the cherry disease which has appeared in Kent, from which I extract the following:—

"The results of experiments in the cultivation of the fungus showed it to be one which belonged to the genus *Gnomonia*. Many of the fungi in this class passed through various stages in their life-history, for example the mildew on wheat, which was first developed on the berberry and then spread to the wheat, appearing first as rust and afterwards as mildew from the same mycelium. The president referred to the absence in this country of any authority competent to investigate cases such as this; on the continent, however, the Governments had taken up the matter, and the experts who had inquired into it had found that to check the spread of the disease it was necessary to collect all the dead leaves and burn them."

Prof. A. W. Bennett followed in the same strain and "enlarged upon the absence in this country of investigations into such matters by State-paid establishments, and described what was being done in the United States, where every State had its own experimental station."

Now it is not my intention to discuss whether the Government does as much for scientific inquiry in the interests of the community as it might do. But it is clear to me that nothing is gained by overstating the case. There are two "State-paid" establishments devoted to botany in this country, Kew and the Botanical Department of the British Museum. Each happens to have upon its staff an officer trained in mycological investigation. And it may be added that Mr. Carruthers is himself consulting botanist to the Royal Agricultural Society.

So far as Kew is concerned, the matter was promptly dealt with in ordinary routine. Mr. Massee, who has charge of the cryptogamic collections, had given a brief account of the disease in his "Text-book of Plant Diseases," with a figure (pp. 110, 111), although at the time (1899), so far as I am aware, the disease had not been noticed in this country. Mr. A. O. Walker, of Maidstone, sent specimens in November, 1900. I quote the *Gardeners' Chronicle* for May 23, 1901 (p. 191), where he writes:—

"Early in November I sent specimens to Mr. G. Massee, of the Kew Herbarium, who reported to me that the leaves were affected by the fungus *Gnomonia erythrostoma*, and quoted Frank's opinion that the leaves should be gathered and burnt."

The council of the Royal Agricultural Society issued on February 6, 1901, a report by Mr. Carruthers giving the history of the disease and recommending Frank's remedy of burning the leaves. There is nothing very profound in this recommendation, as it is a general method applicable to all plant diseases propagated by spores, and aims at removing the source of infection.

As I recently pointed out in NATURE (vol. lxiv. p. 212), we owe to the late Prof. Cornu "the principle now so familiar as to seem almost obvious, of preventive treatment by the careful destruction by burning of the *débris* of plants which may harbour spores."

I may add that the *Gnomonia* is well known to mycologists, having, in fact, been first described by Persoon as a *Sphaeria* a century ago, and there are in the Kew Herbarium specimens of it from no less than eight published collections. Mr. Carruthers in his report, which is reproduced in the *Journal of the Royal Horticultural Society* (n.s. xxv. pp. 313-316), does not give an illustration of the *Gnomonia*, but figures instead a "Fragment of Leaf of Cherry Tree showing groups of Parasitic Fungi." These belong, apparently, to a species of *Phoma* and, so far as I am aware, there is no evidence that they have anything to do with the *Gnomonia*.

There the matter stands, and for my part I entirely fail to see how "the authority competent to investigate cases such as this" of whom we are said to be in want, could carry it farther. The